
New Species and Combinations in Mesoamerican *Randia* (Rubiaceae: Gardenieae)

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ABSTRACT. *Randia nicaraguensis* Lorence & Dwyer from Nicaragua is described and illustrated. Two new combinations are proposed for Mesoamerican Gardenieae: *Randia genipifolia* (Standley & Steyermark) Lorence, based on *Duroia genipifolia* Standley & Steyermark, and *Randia armata* (Swartz) DC. subsp. *panamensis* (Standley) Lorence, based on *Randia panamensis* Standley.

Randia L. (Gardenieae) is a genus of over 90 species distributed in the New World tropics and subtropics, ranging from northern Mexico and Texas through Mexico, Central America, and the Caribbean into South America (Lorence & Dwyer, 1987). During the course of preparing the Rubiaceae treatment for *Flora Mesoamericana*, collections representing an undescribed species from Nicaragua were encountered. In addition, two new combinations are proposed in Mesoamerican *Randia*.

***Randia nicaraguensis* Lorence & Dwyer, sp. nov.**

TYPE: Nicaragua. Estelí: 4.9–7.6 km NE of Hwy. 1 at Estelí along road to Yalí, ca. 13°08–09'N, 86°19–20'W, 1100 m, 14 Nov. 1979, W. D. Stevens & A. Grijalva 15553 (holotype, MO-2872306; isotypes, F, HNMN, MEXU, MO).

Figure 1.

Species *Randiae monanthae* Benthon affinis, sed foliis supra glbris, subtus secus costam et venas sparsius strigilosis, hypanthio et calyce strigilloso vel glabro, calycis lobis subulatis 0.5–1 mm longis, tubo corollino 15–18 mm longo extus glabro, corollae lobis 10–16 × 6–7 mm glabris differt.

Dioecious, deciduous small tree or shrub 2–8(–12) m tall, the trunk 12–25 cm diam., spiny, the bark gray, exfoliating, the crown narrow, the twigs terete, 2–4.5 mm diam., usually armed with 1–2 (less commonly 3–4) stout spines at or near apex, the spines (3–)4–12 mm long, slightly recurved, the lateral twigs (short shoots) usually decussate, 2–10 cm long, 2–5 mm diam., glabrous, sparsely lenticellate, the bark thin, brown, peeling. Leaves clustered beyond spines on swollen, unbranched twig

tips, shortly petiolate or subsessile; petioles 4–15 × 1–1.2 mm, strigillose, winged from the decurrent lamina, adaxially sulcate; lamina obovate, obovate-elliptic, or elliptic, 4–10 × 2–5 cm, chartaceous or subcoriaceous, drying dark greenish brown, adaxially glabrous, abaxially strigillose on costa and 2° and 3° veins, the base attenuate and decurrent, the apex obtuse or rounded, the 2° veins 6–7(–8) pairs, the venation adaxially impressed and visible to 4°, abaxially prominulous and visible to 5°; stipules on short shoots persistent, broadly deltoid or ovate-deltoid, 2–6 × 2–4 mm, brown, externally glabrous or sparsely strigillose, often white punctate, the margins scarious, internally densely villous-sericeous with white hairs, colleters absent, stipules on long shoots similar but broadly deltoid, 2–3 × 2 mm, tardily deciduous. Flowers of both sexes terminal, solitary or paired, 4–5-merous, subtended by stipule-like bracts. Staminate flowers with strigillose pedicels 2–4 mm long, 1.5 mm diam., hypanthium broadly obconical, 2–3 mm long and wide, strigillose or glabrate, calyx cup 1–2 mm deep, externally strigillose or glabrate, internally strigillose, margin with 5 sparsely strigillose subulate teeth 0.5–1 mm long; corolla with white or yellow lobes and green tube when fresh, fragrant, salverform, the tube 15–18 × 3–4 mm medially, externally glabrous, internally sparsely villous in upper half, the lobes ovate, 10–16 × 6–7 mm basally, apically acute to obtuse, both sides glabrous; stamens attached in upper ¼ of tube, the anthers linear, 5–6 mm long; style 16 mm long, glabrous, the stigma slightly bilobed, slightly exserted. Pistillate flowers with hypanthium obconical-ellipsoid or cylindrical-ellipsoid, 10–14 × 5–6 mm, strigillose or glabrate, the calyx cup 3–5 mm deep, glabrate on both sides, often splitting along one side, the margin with 5 sparsely puberulent subulate teeth 0.5–1 mm long; corolla salverform, the tube 10–15 × 3–4 mm medially, externally glabrous, internally villous distally, the lobes broadly ovate, 8–15 × 6–8 mm, apically acute to obtuse, both sides glabrous; anthers attached near middle of tube, linear, 3.5 mm long; style 15 mm long, glabrous, the stigma lobes 4 mm

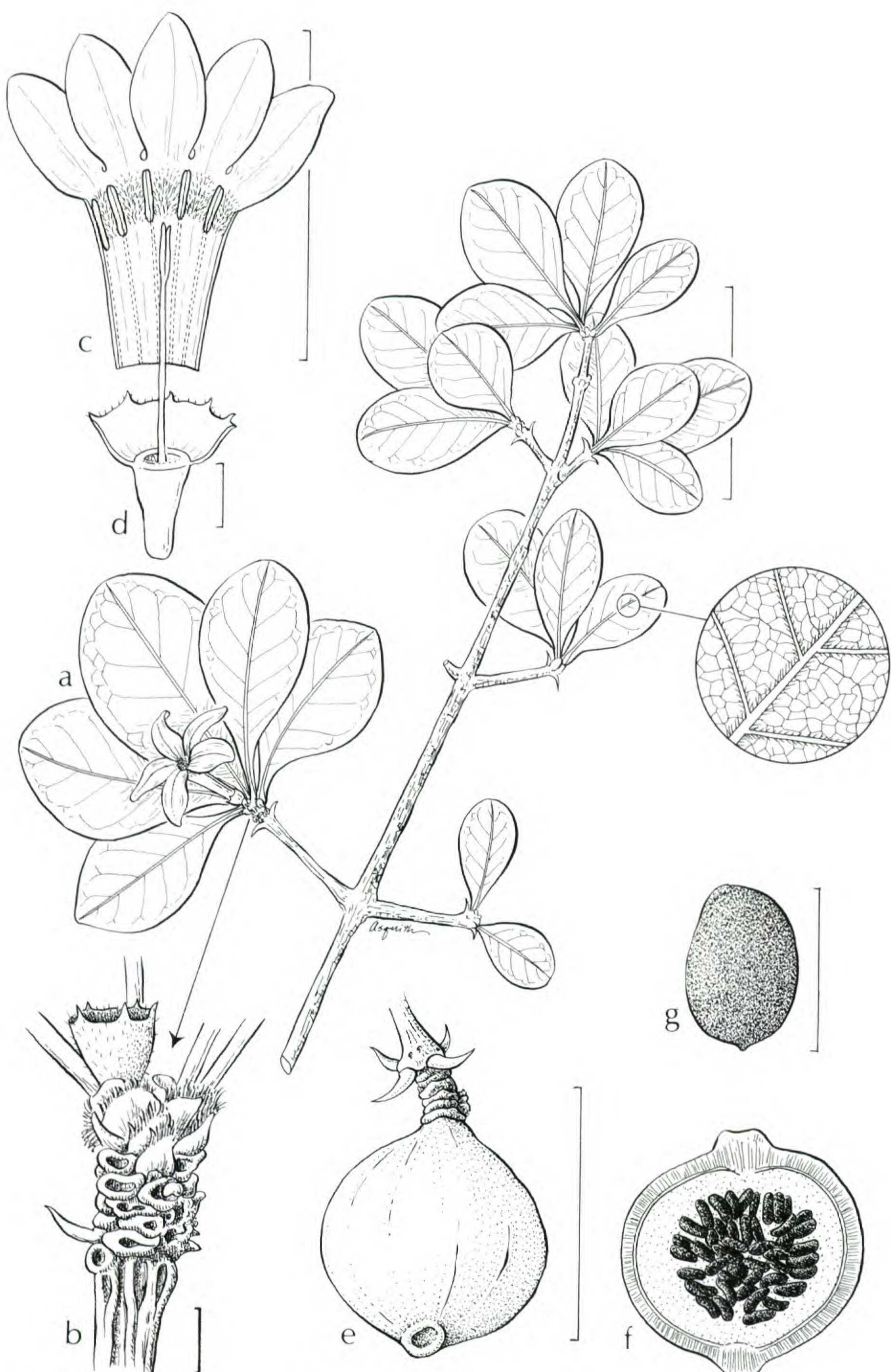


Figure 1. *Randia nicaraguensis* Lorence & Dwyer. —a. Habit, staminate plant. —b. Detail of twig apex. —c. Staminate corolla, opened. —d. Pistil of staminate flower. —e. Fruit. —f. Fruit, longitudinal section. —g. Seed. a-d, Moreno 21531; e-g, Moreno 18530. Bars = 5 cm in a, e, f; 4 mm in b, d; 37 mm in c; 8 mm in g.

Duroia L.f., also a member of the Gardenieae, ranges from southern Central America to South America and comprises over 30 species (Anderson, 1992; Dwyer, 1980). As in the related genus *Randia*, species of *Duroia* are also dioecious shrubs or small trees with large, baccate fruits containing numerous seeds. *Duroia* differs from *Randia* in having calyprate, circumscissile, and deciduous stipules, 5–9(–12)-merous flowers, a 1–4-locular ovary with 5–6 parietal placentas sometimes joined in the center, and triporate monad pollen grains.

Examination of the type of *Duroia genipifolia* and additional collections from Guatemala and Belize shows this species is clearly referable to the genus *Randia* based on its 5-merous flowers, unilocular ovary with two large, bilobed parietal placentas, and pollen grains united in permanent tetrads. Examination of the type of *Randia gentlei* reveals it to be conspecific with *R. genipifolia* and thus synonymous. This species is currently known from only a few collections collected in the Caribbean lowlands of Belize and Guatemala.

THE SUBSPECIES OF *RANDIA ARMATA* IN MESOAMERICA

Taylor and Lorence (1993) discussed the status and typification of *Randia armata* (Swartz) DC., a widespread and morphologically variable spiny shrub or small tree characteristic of moist and dry forests from Mexico and the Lesser Antilles to South America (Paraguay). *Randia panamensis* Standley, based on a specimen from Bocas del Toro, Panama, shares a number of morphological characters with *R. armata*. Indeed, the two species were combined in Dwyer's Rubiaceae treatment for *Flora of Panama* (Dwyer, 1980: 444).

Examination of numerous collections of *R. armata* and *R. panamensis* for a treatment of *Randia* for the *Flora Mesoamericana* project suggests that these two entities are better treated as subspecies: subsp. *armata*, which ranges from central western Mexico to the Lesser Antilles and South America; and subsp. *panamensis*, which is restricted to Panama. These two subspecies are modally distinct and in most cases are separable by the characters given in the key below. However, these features occasionally intergrade in certain collections. For example, both *Croat* 5749 and 9131 from Barro Colorado Island, Panama, have stipules and calyx lobes that are intermediate between the two subspecies, but the armed twigs and longer pedicels are characteristic of subspecies *armata*. The collection *Sytsma* 1714 from Río Guanche in Colón, Panama, has spheroidal fruits and calyx lobes char-

acteristic of subspecies *panamensis*, but its stipules and distinct pedicels are characteristic of subspecies *armata*. Whether these deviating collections are the result of introgressive hybridization remains to be determined by field studies.

Randia armata* (Swartz) DC. subsp. *panamensis (Standley) Lorence, comb. et stat. nov. Basionym: *Randia panamensis* Standley, Publ. Field Columbian Mus., Bot. Ser. 4: 288. 1929. TYPE: Panama. Bocas del Toro: region of Almirante, Flat Rock, Jan.–Mar. 1928, G. Proctor-Cooper 213 (holotype, F 579675, photos MEXU, PTBG).

Distribution and habitat. Subspecies *panamensis* is known only from Panama in the provinces of Coclé, Colón, Darién, Panamá, and San Blas. It occurs from 0 to 700 m elevation in lowland tropical moist and wet forest, riparian forest, and premontane wet forest, rarely in cloud forest from 1250 to 1450 m.

Additional collections studied. PANAMA. **Chiriquí:** Burica Peninsula, Rabo de Puerco, 8 km W of Puerto Armuelles, 50–150 m, 18 Feb. 1973, *Croat* 21943 (MO). **Coclé:** Alto Calvario, Rivera sawmill, 600–800 m, 12 May 1977, *Folsom* 3176 (MO); 12 mi. from Llano Grande, 700 m, 8°47'N, 80°28'W, 11 Dec. 1983, *Churchill et al.* 4050 (MO); Caribbean side of [Continental] Divide at El Copé, 8°45'N, 80°35'W, 200–400 m, 3 Feb. 1983, *Hamilton & Davidse* 2621 (MO, PTBG). **Colón:** Santa Rita Ridge trail beyond Santa Rita Ridge Rd. (Hwy. R20D), 400–800 m, 22 May 1975, *Mori & Crosby* 6345 (MO); E of Santa Rita Ridge, 11 Jan. 1968, *Correa A.* 593 (MO); trail from end Santa Rita Ridge Rd. to Río Piedras, 600 m, 16 Feb. 1980, *Antonio* 3738 (MO); Santa Rita Ridge, 20 km from Transisthmian Hwy., Río Gatun drainage, 400 m, 9°25'N, 79°37'W, 22 Oct. 1981, *Knapp & Schmalzel* 1766 (MO); Río Guanche, 9°30'N, 79°39'W, 0–75 m, 16 Oct. 1980, *Sytsma* 1714 (MO); Río Guanche, 2.5 km up-river from bridge on rd. to Portobelo, 3 June 1975, *Mori et al.* 6440 (MO). **Comarca de San Blas:** road from El Llano to Cartí, Pacific side, 79°00'W, 9°20'N, 350 m, 13 Feb. 1983, *Hamilton & Stockwell* 2885 (MO); San Blas, trail from El Llano to Cartí-Tupile, Continental Divide, 400–200 m, 22 Feb. 1973, *Kennedy* 2586 (MO); El Llano-Cartí Road, km 19.1, 9°19'N, 78°56'W, 9 Nov. 1984, *de Nevers & Herrera* 4248 (MO, PTBG), 350 m, 18 Nov. 1984, *de Nevers* 4308 (MO, PTBG); Cerro Habu, trail from Río Sidro, 800–1400 ft., 78°49'W, 9°23'N, 18 Dec. 1980, *Sytsma et al.* 2639 (MO); trail to Cerro Obu (Habu of maps) from Río Urgandi (Río Sidra), 100–300 m, 9°23'N, 78°48'W, 24 June 1986, *de Nevers et al.* 7967 (MO, PTBG). **Darién:** Parque Nacional del Darién, Estación Rancho Frío at N base of Cerro Pirre, ca. 9 km S of El Real, 8°01'N, 77°44'W, 70–270 m, 8 Oct. 1987, *Hammel et al.* 16108 (COL, MO, PTBG); Parque Nacional del Darién, trocha hacia Cerro Pirre, 8°00'N, 77°45'W, 500–700 m, 8 Feb. 1991, *Herrera et al.* 898 (MO, PTBG); Parque Nacional del Darién, ridge between N and S branches of Río Pucuro, across from old Tacarcuna village, 8°01'N, 77°16'W, 600–1000 m, 21 Oct. 1987, *Hammel et al.*

16341 (COL, MO, PTBG); Cerro Tacarcuna, S slope, 1250–1450 m, ridge top forest below summit, 26 Jan. 1975, *Gentry & Mori* 13923 (MO); Ensenada del Guayabo, 18 km SE of Jaqué, 13 Jan. 1983, *Garwood et al.* 205 (MO); N slopes and flatlands of Río Jaqué Valley, along Quebrada Luka, 7°27'N, 78°05'W, 0–300 m, 24 Jan. 1982, *Knapp & Mallet* 3131 (MO); Río Cuasi, main stream, 0–2.5 mi. S of Tres Bocas, 28 Apr. 1968, *Kirkbride & Duke* 1139 (MO). **Panamá:** Cerro Jefe, 15 Apr. 1971, *Croat* 14433 (MO); Camino de Llano a Cartí, 14–18 km de la carretera a Chepo, 400 m, 20 Feb. 1973, *Correa et al.* 1881 (MO); El Llano–Cartí Road, 10 km from Inter-American Hwy., 5 Oct. 1974, *Mori & Kallunki* 2332 (MO), 8 mi. from Pan-American hwy., 09°15'04"N, 79°00'04"W, 225–275 m, 16 Feb. 1987, *McPherson* 10486 (MO, PTBG); 8 km N of El Llano on El Llano–Cartí Road, E of Río Terable, 450 m, 9°15'N, 78°50'W, 19 Aug. 1981, *Knapp* 945 (MO); 25 km NE of Cerro Azul on Río Piedras, Gorgas Memorial Labs yellow fever research camp, 550 m, 20–22 Nov. 1974, *Mori & Kallunki* 3288 (MO); Mtns. above Torti Arriba, 2 Dec. 1977, *Folsom et al.* 6591 (MO); Serrania de Maje, S of Choco village of Ipeti, Río Ipeti drainage system, 8°47'N, 78°27'W, 500–600 m, 11 Dec. 1981, *Knapp & Sytsma* 2379 (MO); Río Piratí, foothills of Serrania de Majé, 9°00'N, 78°35'W, 100–150 m, 16 May 1982, *Knapp & Mallet* 5146 (MO, PTBG); Río Maje, near Bayano Lake, 30–60 m, 4 May 1976, *Croat* 39593 (MO, PTBG).

KEY TO THE SUBSPECIES OF *RANDIA ARMATA*

1a. Twigs usually armed with spines, rarely unarmed; stipules 2–6 mm long, acute apically, not strong-

ly venose or becoming fibrous with age; calyx lobes not strongly venose, usually not persisting in fruit; flowers and fruits with pedicel (3–)5–12 mm long; fruits ellipsoidal . . . *R. armata* subsp. *armata*

1b. Twigs generally unarmed, rarely with a few short spines; stipules 5–12 mm long, acuminate or aristate apically, with prominent parallel veins, becoming fibrous with age; calyx lobes with prominent parallel veins or at least costa, often reflexed and persisting in fruit; flowers and fruits sessile or the pedicels 1–3(–8) mm long; fruits spheroidal *R. armata* subsp. *panamensis*

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